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SAMPLING PLAN FOR
RICO-ARGENTINE MINE
RICO, COLORADO
TDD #R8-8408-17

EPA REGIONAL SITE PROJECT OFFICER: THOMAS STAIBLE
FIT PROJECT OFFICER: MARGARET BABITS

SUBMITTED TO: KEITH SCHWAB - FIT RPO
DATE SUBMITTED: OCTOBER 18, 1984

OK except TDS
TFS
Nov. 6, 1984

SAMPLING PLAN FOR THE
RICO - ARGENTINE MINE
RICO, COLORADO

I. INTRODUCTION

Under the provisions of Technical Directive Document (TDD) R8-8408-17, Region VIII, U.S. Environmental Protection Agency (EPA) tasked the Ecology and Environment, Inc. Field Investigation Team (E&E FIT) to prepare a sampling plan for the Rico-Argentine Mine near Rico, Colorado. This sample plan has been prepared to satisfy the requirements of the above referenced TDD. This sampling plan conforms to the requirements established in the Region VIII FIT Standard Operating Procedures for sampling.

II. OBJECTIVES

1. Characterize the contaminants present in off-site surface water.
2. Characterize the contaminants present in on-site seeps.
3. Determine whether ground water in the area is contaminated by pond's discharge, tunnel discharge, and treated mine water discharge, and identify the contaminants.
4. Determine whether surface water in the area is contaminated by pond's discharge, tunnel discharge, and treated mine water discharge, and identify the contaminants.

III. SITE DESCRIPTION

A. LOCATION

The Rico-Argentine Mine and Mill operations are located on the Dolores River one mile north of the town of Rico and on Silver Creek

one mile east of the town of Rico, Colorado (Figure 1). The area is in portions of Sections 24 and 25, Township 40 North, and Range 11 West.

Operations consisted of a mill and tailings ponds on Silver Creek and an acid plant, cyanide heap leach, and settling ponds on the Dolores River. There were two discharge points associated with the mine. Discharge point 001 was the discharge from the Blaine Tunnel. The permittee is no longer discharging from 001 and the water is redirected underground to the St. Louis Tunnel System where it drains to the St. Louis Settling Pond System. The outfall of the final pond is discharge point 002 (Figure 2).

The topography of the area is steep. Elevations range between 8800 and 9300 feet.

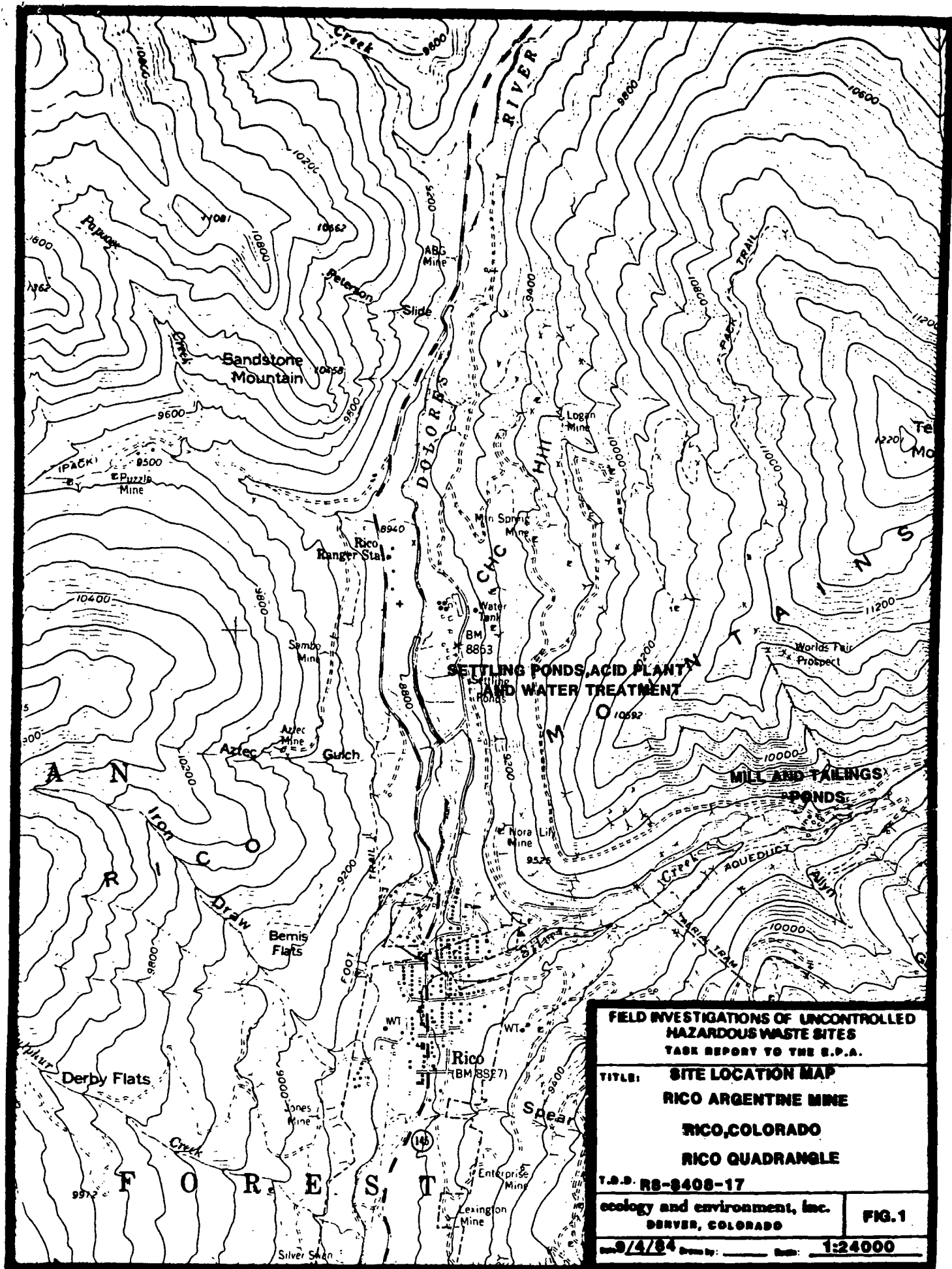
B. SITE HISTORY

Anaconda Minerals Company assumed control of the Rico Argentine Company in 1980 when it purchased two sections of mining claims in the Pioneer Mining District. At this same time, the Colorado Department of Health, Division of Administration, issued a notice of violation and a cease and desist order. The Rico-Argentine Mine is now operating under NPDES permit CO - 0029793 issued in 1982.

Initially, the chief metal produced in the Rico District was silver. During the 1954 uranium boom, there was a switch to pyrite for sulfuric acid production, and a sulfuric acid plant was built. More recently, zinc and lead have been the most valuable metals. Anaconda bought the Rico-Argentine Mine to explore for molybdenum and are now looking into precious metals.

C. SITE GEOLOGY

The ores in the Rico District are found in cracks and crevices created by fault zones and in the sedimentary rocks of the Hermosa



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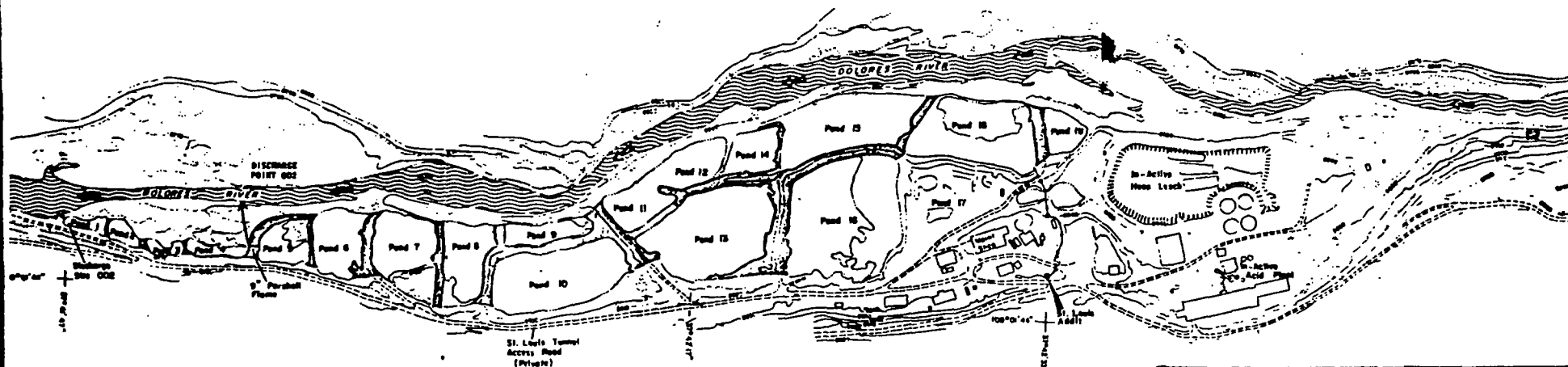
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**FIELD INVESTIGATIONS OF UNCONTROLLED
HAZARDOUS WASTE SITES
TASK REPORT TO THE E.P.A.**

**TITLE:
ST. LOUIS SETTLING POND SYSTEM**

taken from:

**ANACONDA COPPER COMPANY
T.S.O.**

**ecology and environment, inc.
DENVER, COLORADO**

FIG.2

Date _____ Drawn by: _____ Scale: _____

Formation, a Pennsylvanian unit of shale, sandstone, and limestone. The central core of the mountains is cut by Tertiary intrusives.

D. SITE HYDROLOGY

The major surface waters in the area are the Dolores River and Silver Creek. Ground water is present in the sedimentary rocks and in the alluvial valley fill associated with the mainstem of the Dolores.

IV. FIELD PROCEDURES

A. CONCEPT OF OPERATIONS

The sampling is scheduled for the week of November 12, 1984. The project schedule is planned as follows:

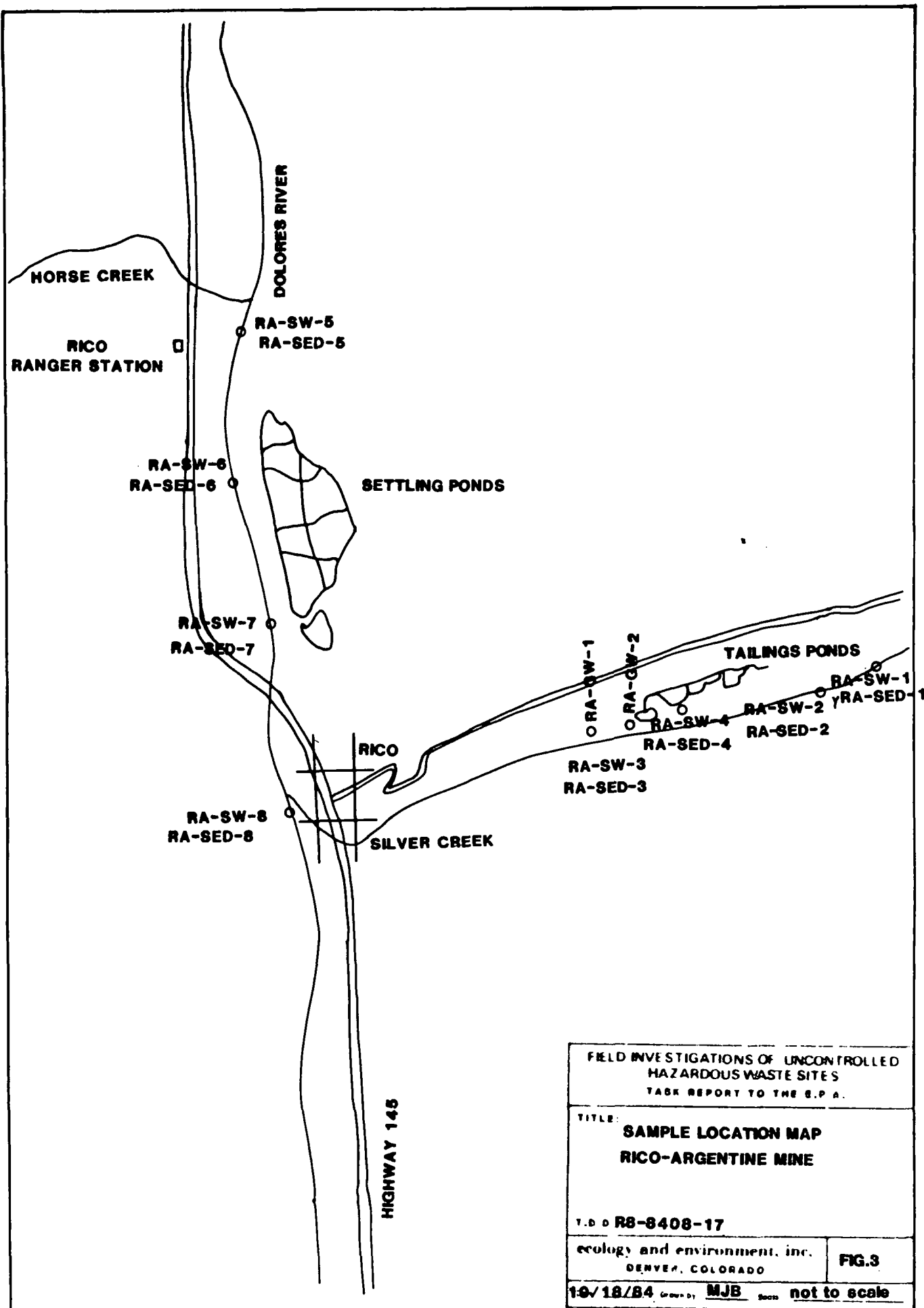
Day 1	Travel from Denver to Telluride
Day 2	Collection of eight surface water samples and eight sediment samples.
Day 3	Collection of two ground water samples Travel to next site.

This field investigation will be conducted with a three person FIT. Consisting of the following members:

Project Officer: Meg Babits
Site Safety Officer/Sampler:
Sampler:

B. SAMPLING LOCATIONS

This sampling activity includes collection of eight surface water samples, eight sediment samples and two ground water samples. Table 1 describes the sampling locations and sampling rationale (Figure 3).



FIELD INVESTIGATIONS OF UNCONTROLLED
HAZARDOUS WASTE SITES
TASK REPORT TO THE E.P.A.

TITLE:
**SAMPLE LOCATION MAP
RICO-ARGENTINE MINE**

T.D.D. R8-8408-17

ecology and environment, inc.
DENVER, COLORADO

FIG.3

10/18/84 Drawn by **MJB** Scale **not to scale**

C. SAMPLING METHODS

FIT will collect samples using methods in accordance with FIT Standard Operating Procedures. Monitoring wells will be bailed to remove two or three casing volumes before collecting samples.

Surface water samples will be collected by putting a bucket directly into the water and transferring water via funnel to polyethylene bottles.

Sediment samples will be collected at the same locations as the surface water samples using plastic scoops. They will be put into 8 oz. glass jars.

D. CONTROL OF CONTAMINATED MATERIALS

The proper means of disposal will be established and utilized. Decontamination fluids will be disposed of on site. Disposable sampling equipment, scoops, foil, plastic, will be bagged and disposed of in proper receptacles.

E. ANALYTICAL PARAMETERS

Table 2 is the Sample Plan Check List describing the parameters to be requested for each sample. All samples will be analyzed for Task 1 and 2 metals, total dissolved solids and sulfates. All samples will be low hazard.

Steffen, Robertson, and Kristen have previously done water quality sampling for Anaconda Minerals Company (SRK 1980-1983) by analyzing for the parameters of total metals, total recoverable metals, and total dissolved metals. The data collected for both total and total recoverable metals in every sampling episode show remarkable similarity. They suggest that the more complicated, total recoverable metal procedure be eliminated. Most samples underwent water quality analyses by Core Laboratories in Denver, Colorado, although some sets were sent for replication to Rocky Mountain Analytical in Denver, Colorado.

F. FIELD QUALITY CONTROL PROCEDURES

All samples will be preserved as described in the FIT SOP. The SOP also describes the methods that will be used for calibrating field instruments. To check field procedures for decontamination, two blank will be prepared by pouring Baker Instra-Analyzed Water through sampling equipment.

A duplicate will be prepared of the surface water sample and the sediment sample with the highest expected level of contamination (See Table 1).

Background samples will be obtained from surface water and sediment. A spring at the Rico Ranger Station may be used for background groundwater. The FIT will determine the usefulness when at the location.

Splits will be provided to Mr. Robert Dent of Anaconda Minerals at his request.

Equipment will be decontaminated following collection of each sample using methods described in the FIT SOP.

G. CHAIN OF CUSTODY

Proper chain of custody procedures will be adhered to throughout the inspection.

V. LOGISTICS

Access to the site has been coordinated through Meg Babits, E&E FIT Project Officer.

The samples will be delivered via Federal Express or delivered by hand.

VI. SAMPLING REPORT

Upon completion of the sampling trip, a report of sampling activities will be submitted to the EPA Region VIII. A report of analytical data will be provided at a later date if requested by EPA.

TABLE 1
BREAKOUT OF SAMPLE TYPES, LOCATIONS AND RATIONALES FOR SAMPLING

SAMPLE MATRIX	SAMPLE NO.	LOCATION	RATIONALE
Ground water	RA-GW-1	Well nearest tailings pond on Silver Creek.	Wells installed by Dames and Moore. Wells are in the drainage way of ponds to Silver Creek.
	RA-GW-2	Well between tailings ponds and Silver Creek.	
	RA-GW-3	Blank	
Surface water	RA-SW-1	Silver Creek at town water supply	Upstream surface water sample
	RA-SW-2	Silver Creek below Blaine Tunnel	Discharge from Blaine Tunnel
	RA-SW-3	Silver Creek below tailings pond	Differentiate between Blaine Tunnel contribution and tailings ponds discharge contribution
	RA-SW-4	Discharge from tailing ponds on Silver Creek	Identify water quality at tailings pond discharge
	RA-SW-5	Dolores River 1 mile north of settling ponds	Upstream surface water sample
	RA-SW-6	Dolores River adjacent to settling ponds	Identify impact of ponds
	RA-SW-7	Dolores River south of discharge 002	Identify impact of treated water
	RA-SW-8	Dolores River south of confluence with Silver Creek	Identify impact of Silver Creek
	RA-SW-9	Blank	
	RA-SW-10	Duplicate	
Sediment	RA-SED-1	Silver Creek at town water supply	Sediments associated with surface water samples to determine presence of contaminants in stream RA-SED-1 is background
	RA-SED-2	Silver Creek below Blaine Tunnel	
	RA-SED-3	Silver Creek below tailings ponds	
	RA-SED-5	Dolores River 1 mile north of settling ponds	Upstream surface water sample
	RA-SED-6	Dolores River adjacent to settling ponds	Identify impact of ponds
	RA-SED-7	Dolores River south of discharge 002	Identify impact of treated water
	RA-SED-8	Dolores River south of confluence with Silver Creek	Identify impact of Silver Creek
	RA-SED-9	Duplicate	

REGION VIII

TDD Number: R8-8408-17

Project Team Leader: MEABARITS

Sampling Date: _____

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REGION VIII
TOD Number: RA-8408-17
Project Team Leader: HEG BARITS
Sampling Date: _____

City: Rico County: Dolores

[illegible]